

Table of Contents *(scroll or use links below to navigate document)*[What They Do](#)[Tasks](#)[Skills, Knowledge, and Abilities](#)[Work Environment](#)[California's Job Outlook and Wages](#)[Trends](#)[Training](#)[Where Do I Find the Job?](#)[Where Can the Job Lead?](#)[Other Sources](#)**What They Do**

Chemical Technicians work with Chemists, Chemical Engineers, and Scientists, developing and using chemicals and related products and equipment. There are two types of Chemical Technicians: Research and Development Technicians, who work in experimental laboratories, and Process Control Technicians, who work in manufacturing or other industrial plants. Many Research and Development Technicians conduct a variety of laboratory procedures, from routine process control to complex research projects. For example, they may collect and analyze samples of air and water to monitor pollution levels or produce compounds through complex organic synthesis. Most Process Control Technicians work in manufacturing, where they test packaging for design, integrity of material, and environmental acceptability. Often, Process Control Technicians who work in plants focus on quality assurance, where they monitor product quality or production processes and develop new production techniques.

Tasks

- ▶ Monitor product quality to ensure compliance to standards and specifications.
- ▶ Set up and conduct chemical experiments, tests, and analyses using techniques such as chromatography, spectroscopy, physical and chemical separation techniques, and microscopy.
- ▶ Conduct chemical and physical laboratory tests to assist scientists in making qualitative and quantitative analyses of solids, liquids, and gaseous materials.
- ▶ Compile and interpret results of tests and analyses.
- ▶ Provide technical support and assistance to chemists and engineers.
- ▶ Prepare chemical solutions for products and processes following standardized formulas, or create experimental formulas.
- ▶ Maintain, clean, and sterilize laboratory instruments and equipment.

Detailed descriptions of this occupation may be found in the Occupational Information Network (O*NET) at online.onetcenter.org.

Important Skills, Knowledge, and Abilities

- ▶ Science — Using scientific rules and methods to solve problems.
- ▶ Reading Comprehension — Understanding written sentences and paragraphs in work-related documents.
- ▶ Quality Control Analysis — Conducting tests and inspections of products, services, or processes to evaluate quality or performance.

Chemical Technicians

- ▶ **Chemistry** — Knowledge of the chemical composition, structure, and properties of substances and of the chemical processes and transformations that they undergo. This includes uses of chemicals and their interactions, danger signs, production techniques, and disposal methods.
- ▶ **English Language** — Knowledge of the structure and content of the English language including the meaning and spelling of words, rules of composition, and grammar.
- ▶ **Mathematics** — Knowledge of arithmetic, algebra, geometry, calculus, statistics, and their applications.
- ▶ **Mechanical** — Knowledge of machines and tools, including their designs, uses, repair, and maintenance.
- ▶ **Deductive Reasoning** — The ability to apply general rules to specific problems to produce answers that make sense.
- ▶ **Near Vision** — The ability to see details at close range (within a few feet of the observer).
- ▶ **Information Ordering** — The ability to arrange things or actions in a certain order or pattern according to a specific rule or set of rules (e.g., patterns of numbers, letters, words, pictures, mathematical operations).
- ▶ **Written Comprehension** — The ability to read and understand information and ideas presented in writing.

Work Environment

Chemical Technicians may work outdoors collecting samples. However, most work indoors in well-lit, well-equipped laboratories. They are exposed to health and safety hazards from equipment, chemicals, or toxic materials. However, risks are minimal when protective gear is worn and proper safety procedures are followed.

Most Chemical Technicians work regular hours. Some occasionally work irregular hours to monitor experiments that cannot be completed during regular working hours.

California's Job Outlook and Wages

The California Outlook and Wage table below represents the occupation across all industries.

| Standard Occupational Classification | Estimated Number of Workers 2004 | Estimated Number of Workers 2014 | Average Annual Openings | 2006 Wage Range (per hour) |
|--------------------------------------|----------------------------------|----------------------------------|-------------------------|----------------------------|
| Chemical Technicians | | | | |
| 19-4031 | 4,700 | 5,400 | 190 | \$14.31 to \$22.84 |

Wages do not reflect self-employment.

Average annual openings include new jobs plus net replacements.

Source: www.labormarketinfo.edd.ca.gov, Employment Projections by Occupation and OES Employment & Wages by Occupation, Labor Market Information Division, Employment Development Department.

Trends

Employment of Chemical Technicians is expected to grow at about an average rate compared to all occupations over the 2004–2014 period. However, the continued growth of scientific and medical research, particularly research related to biotechnology, as well as the development and production of technical products, should stimulate demand for Chemical Technicians in many industries.

Training/Requirements/Apprenticeships

Chemical Technicians usually follow one of the following training paths:

- ▶ Associate degree
- ▶ Vocational school
- ▶ Community College programs or certificates
- ▶ Extensive on-the-job training

Most employers prefer to hire Chemical Technicians with an associate degree in a science discipline. Numerous community colleges offer two-year programs for Chemical Technicians.

Recommended High School Course Work

High school preparation courses in chemistry, biology, physics, algebra, geometry, trigonometry, statistics, and computer technology are helpful.

Where Do I Find the Job?

Direct application to employers remains one of the most effective job search methods.

Use the *Search for Employers by Industry* feature on the *Career Center* page at www.labormarketinfo.edd.ca.gov to locate employers in your area. Search under the following manufacturing industry names to get a list of private firms and their addresses:

- | | |
|---------------------------------|--|
| ▶ Architectural Services | ▶ Landscape Architectural Services |
| ▶ Biological Product | ▶ Other Surveying and Mapping Services |
| ▶ Building Inspection Services | ▶ Pharmaceutical Preparation |
| ▶ Drafting Services | ▶ Physical/Engineering/Biological Research |
| ▶ Engineering Services | ▶ Social Science and Humanities Research |
| ▶ In-Vitro Diagnostic Substance | ▶ Testing Laboratories |

Search these **yellow page** headings for listings of private firms:

- | | |
|--|----------------------------|
| ▶ Biotechnology, Products and Services | ▶ Laboratories, Biological |
| ▶ Chemicals Wholesale & Manufacturers | ▶ Laboratories, Research |
| ▶ Laboratories, Analytical | ▶ Laboratories, Testing |

Where Can the Job Lead?

Chemical Technicians usually begin work as trainees in routine positions, under the direct supervision of a scientist or a more experienced technician. As they gain experience, technicians take on more responsibility and carry out assignments under only general supervision. Chemical Technicians may advance to become supervisors. Advancement opportunities are best for those who obtain a bachelor's degree and additional work experience.

Chemical Technicians

Other Sources of Information

American Chemical Society

www.acs.org

American Chemical Society, Division of Chemical Technicians

<http://membership.acs.org/t/tech>

National Association of Manufacturers

www.nam.org

Society for Industrial Microbiology

www.simhq.org

Manufacturing Careers